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4401 Great America Parkway  
Santa Clara, CA 95054

# Installation and Reference for the BayStack 70 Series 10/100 Ethernet Switches



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# Preface

Congratulations on your purchase of a BayStack 70-8T 10/100 Ethernet Switch, BayStack 70-16T 10/100 Ethernet Switch, or BayStack 70-24T 10/100 Ethernet Switch. These switches provide eight, 16, or 24 ports, respectively. Switches in the BayStack™ 70 Series provide you with low-cost network solutions and let you easily upgrade your existing 10 megabit per second (Mb/s) Ethernet network to 100 Mb/s Fast Ethernet. The BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch are designed for use as desktop or workgroup switches. The BayStack 70-24T 10/100 Ethernet Switch can be used as a desktop switch as well, but it also operates as a segment switch when installed in a wiring closet.

A BayStack 70 Series 10/100 Ethernet Switch is easy to use and maintain, and it provides seamless plug-and-play installation into your network. All BayStack 70 Series 10/100 Ethernet Switch models are designed to support workgroups operating at 10 Mb/s and/or 100 Mb/s.

In this guide, the BayStack 70-8T 10/100 Ethernet Switch, BayStack 70-16T 10/100 Ethernet Switch, and BayStack 70-24T 10/100 Ethernet Switch are referred to collectively as the BayStack 70 Series 10/100 Ethernet Switch. Each model is referred to specifically when features and functions are unique to that particular model.

## Purpose

This guide provides information about using the features and capabilities of the BayStack 70 Series 10/100 Ethernet Switch.

## Audience

This guide is intended for Ethernet local area network (LAN) administrators with the following background:

- Working knowledge of PC terminology and operation
- Working knowledge of 10BASE-T (Ethernet) and 100BASE-TX (Fast Ethernet) operations
- Nortel Networks™ network experience

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# Chapter 1

## Introduction

This chapter gives you an overview of the three BayStack 70 Series 10/100 Ethernet Switches. The chapter describes the front and rear panels of each switch and explains in detail the components on each of the panels. The chapter lists the key features of the switches.

### **BayStack 70 Series 10/100 Ethernet Switches Overview**

The BayStack 70-8T, 70-16T, and 70-24T 10/100 Ethernet switches are autosensing 10/100 Mb/s switches. The BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch are intended for use on desktops or other level surfaces. The BayStack 70-24T 10/100 Ethernet Switch can be used either as a desktop switch or as a segment switch in a wiring closet environment, mounted in a standard 19-inch equipment rack.

All ports on a BayStack 70 Series 10/100 Ethernet Switches can autosense their transmission speed to match the best speeds of the connected stations. BayStack 70 Series 10/100 Ethernet Switches ports operate at speeds up to 100 Mb/s. Each port can autonegotiate with the connected device to operate in full-duplex mode. If the connected device is operating at half-duplex mode only, or does not have the capability to participate in the autonegotiation process, the port will default to half-duplex mode.

The BayStack 70 Series 10/100 Ethernet Switches can be used to segment a 10 Mb/s or 100 Mb/s network to enhance the capacity of the network to support advanced applications. The switch provides a link between traditional 10 Mb/s networks and faster 100 Mb/s networks. By installing a 10/100 autosensing switch, a user can connect any 10 Mb/s or 100 Mb/s device to the switch without being concerned about the transmission speed of the device. One of the many benefits provided by the BayStack 70 Series 10/100 Ethernet Switches is that network users can migrate from 10 Mb/s switching to 100 Mb/s switching using a single product.

## Physical Description

Each BayStack 70 Series 10/100 Ethernet Switches is housed in a sturdy enclosure with a slim profile that makes it usable as a desktop unit. In addition, the BayStack 70-24T 10/100 Ethernet Switch can be mounted in a standard 19-inch equipment rack, depending on the amount of connections your network requires.

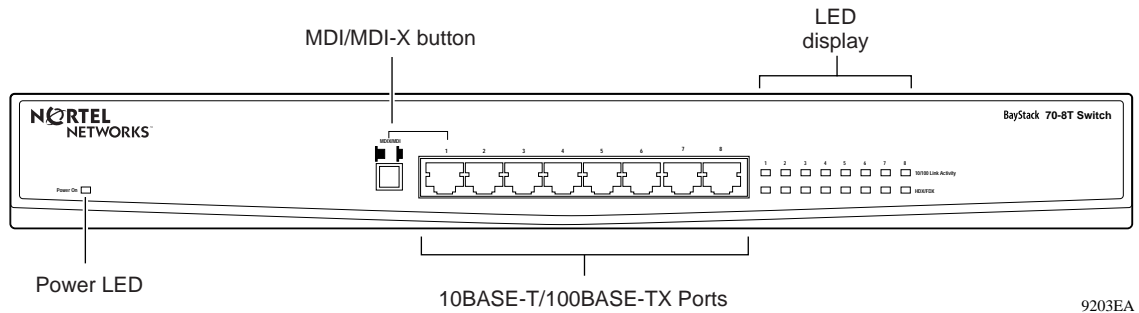
The following sections provide physical descriptions of the switches and an overview of the components on the front and rear panels.

### Front Panel

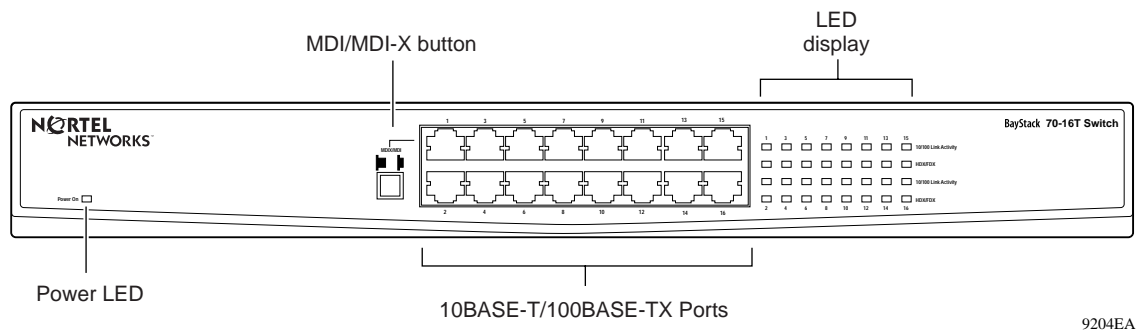
The front panel of each switch contains:

- RJ-45 10BASE-T/100BASE-TX Ethernet ports
- One Power LED
- One 10/100 Link/Activity LED per port
- One half-duplex (HDX) / full-duplex (FDX) LED per port
- MDI/MDI-X push button to set port 1 to uplink (MDI) mode

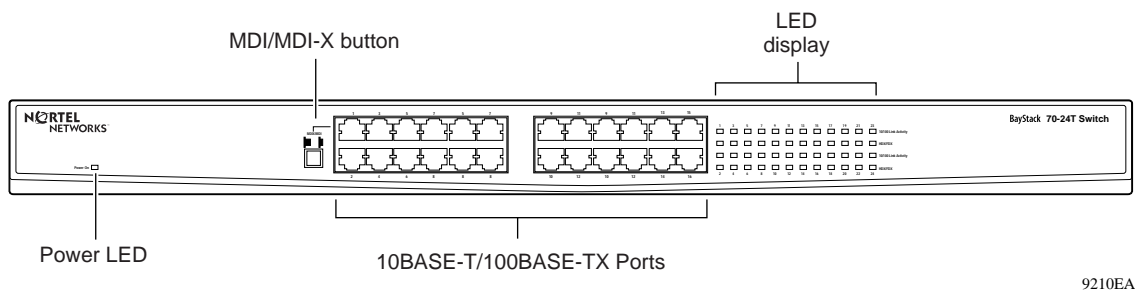
[Figure 1-1](#), [Figure 1-2](#), and [Figure 1-3](#) illustrate the front panel of the BayStack 70-8T 10/100 Ethernet Switch, BayStack 70-16T 10/100 Ethernet Switch, and BayStack 70-24T 10/100 Ethernet Switch, respectively.



**Figure 1-1. Front Panel of the BayStack 70-8T 10/100 Ethernet Switch**



**Figure 1-2. Front Panel of the BayStack 70-16T 10/100 Ethernet Switch**



**Figure 1-3. Front Panel of the BayStack 70-24T 10/100 Ethernet Switch**

## **RJ-45 10BASE-T/100BASE-TX Ethernet Ports**

The RJ-45 10BASE-T/100BASE-TX Ethernet ports connect the switch to network devices using standard unshielded twisted-pair (UTP) cable. The BayStack 70 Series 10/100 Ethernet Switches does not support shielded twisted-pair (STP) cable. Each port adapts to the correct network speed of 10 Mb/s or 100 Mb/s through autonegotiation with the network interface card (NIC), hub, or other switch connected to the BayStack 70 Series 10/100 Ethernet Switches. By default, each Ethernet port is wired as an MDI-X port to connect end stations without using a crossover cable.

## **MDI/MDI-X Button**

The MDI/MDI-X push button converts port 1 from an MDI-X (normal) port to an MDI (uplink) port to allow you to connect the switch to another Ethernet switch without a crossover cable.



**Note:** Observe standard networking guidelines when installing or connecting a BayStack 70 Series 10/100 Ethernet Switches to additional devices.

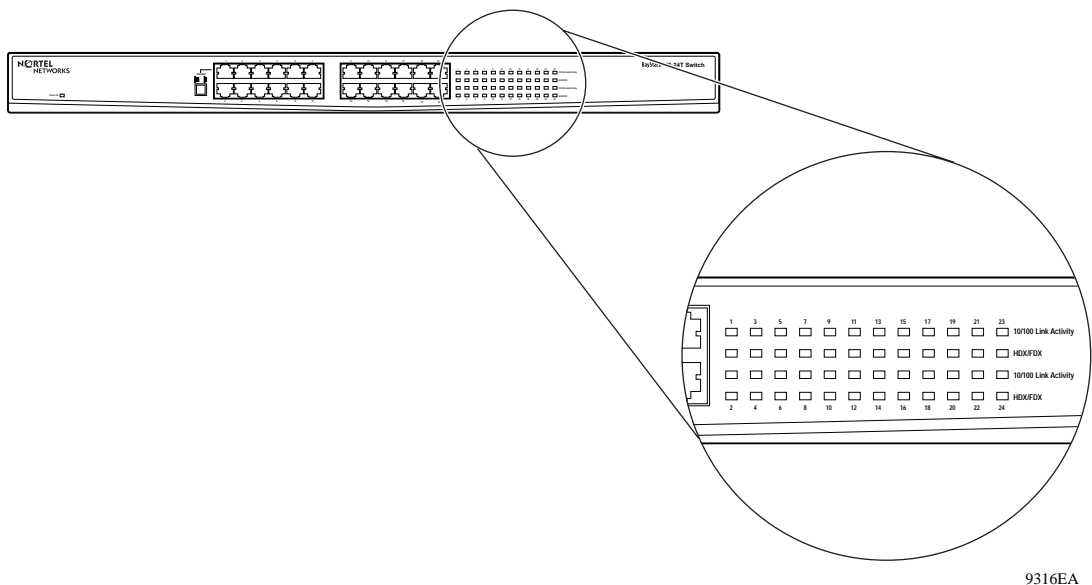
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Refer to Appendix B, “Cables and Connectors,” for more information about MDI/MDI-X ports and cabling.

LEDs

The LEDs on the BayStack 70 Series 10/100 Ethernet Switches allow you to identify information about the performance and status of the switch including link activity, data transmission speed, and duplex mode.

[Figure 1-4](#) shows the LEDs on the front panel of the BayStack 70-24T 10/100 Ethernet Switch. Front panel LEDs for the BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch are identical.



**Figure 1-4. BayStack 70-24T 10/100 Ethernet Switch LEDs**

[Table 1-1](#) provides descriptions of the LEDs.

**Table 1-1. Description of Switch and Port Status LEDs**

Type	Label	Color	Activity	Description
Port Status	10/100 Link/Activity	Yellow	On	Port is connected at 10 Mb/s.
		Yellow	Blinking	10 Mb/s activity is occurring on the port.
		Green	On	Port is connected at 100 Mb/s.
			Blinking	100 Mb/s activity is occurring on the port.
			Off	No link is established on the port.
Port Mode	HDX/FDX	Green	On	Port is operating in full-duplex mode.
			Off	Port is operating in half-duplex mode.
Power	Power	Green	On	Power is being supplied to the switch.
			Off	Power is not being supplied to the switch.

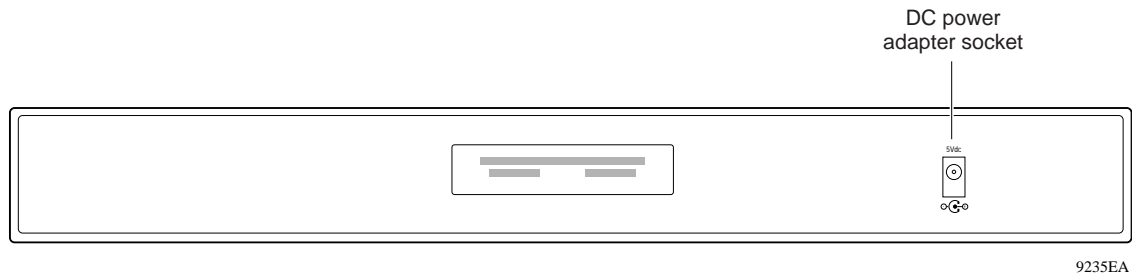
## Rear Panel

This section provides rear panel details for the BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch and separate details for the BayStack 70-24T 10/100 Ethernet Switch.

### Rear Panel of the BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch

The rear panel of the BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch contains a power receptacle for the AC to DC power adapter that ships with the switch. Refer to [“DC Power Adapter”](#) on [page 1-8](#) for details regarding the power adapters. A label on the rear panel displays the date, manufacturing model number, order number, and serial number of the switch.

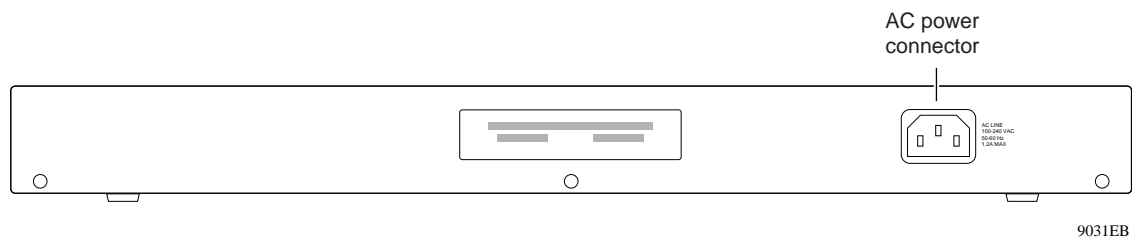
The rear panel of the BayStack 70-8T 10/100 Ethernet Switch and rear panel of the BayStack 70-16T 10/100 Ethernet Switch are identical and are illustrated in [Figure 1-5](#).



**Figure 1-5. Rear Panel of the BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch**

### Rear Panel of the BayStack 70-24T 10/100 Ethernet Switch

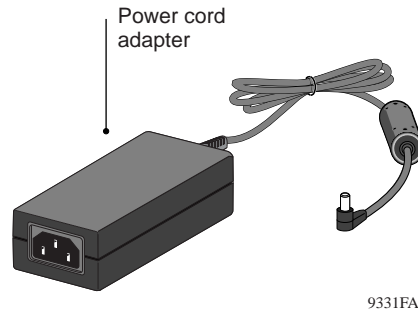
The rear panel of the BayStack 70-24T 10/100 Ethernet Switch contains a standard AC power connector, as shown in [Figure 1-6](#). A separate power adapter is not required for the BayStack 70-24T 10/100 Ethernet Switch. A label on the rear panel displays the date, manufacturing model number, order number, and serial number of the switch.



**Figure 1-6. Rear Panel of the BayStack 70-24T 10/100 Ethernet Switch**

## DC Power Adapter

The BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch are shipped with a power adapter and cord, as shown in [Figure 1-7](#).



**Figure 1-7. DC Power Adapter**



**Warning:** Use only the power adapter that was shipped with your switch to supply power to that switch. Read the amperage label on the power adapter to be sure it is the correct adapter for your switch.

Do not use the 8-port adapter (5 V DC/3 Amp) with a 16-port switch.

Do not use the 16-port adapter (5 V DC/4 Amp) with an 8-port switch.

The BayStack 70-8T 10/100 Ethernet Switch is shipped with a 5 V DC/3 Amp power adapter. Be sure to use this 3 Amp adapter only with the 8-port switch.

The BayStack 70-16T 10/100 Ethernet Switch is shipped with a 5 V DC/4 Amp power adapter. Be sure to use this 4 Amp adapter only with the 16-port switch.

## Cable Holder

A small plastic clip, or holder, can be screwed into the base of the switch to hold the power adapter cable in place. The hole for the cable holder is located on the bottom of the switch, near the DC power receptacle.



## Cooling Fans

Variable-speed cooling fans in the BayStack 70-16T 10/100 Ethernet Switch and BayStack 70-24T 10/100 Ethernet Switch provide cooling for the internal components. When you install the switch, be sure to allow enough space on both sides of the switch for adequate air flow around the switch.

## Features

The BayStack 70 Series 10/100 Ethernet Switches has the following key features:

- Eight (BayStack 70-8T 10/100 Ethernet Switch), 16 (BayStack 70-16T 10/100 Ethernet Switch), or 24 (BayStack 70-24T 10/100 Ethernet Switch) autosensing 10/100 Mb/s Ethernet ports to provide fast information exchange, resource sharing, and client or peer-to-peer communication using standard Category 5 unshielded twisted pair (UTP) cable
- Automatic address learning to build MAC frame forwarding information tables, as shown in [Table 1-2](#)

**Table 1-2.           MAC Address Quantities**

Model	MAC Addresses in Information Table
BayStack 70-8T 10/100 Ethernet Switch	Up to 8,000 MAC addresses are supported. Therefore, the switch can support networks with up to 8,000 devices.
BayStack 70-16T 10/100 Ethernet Switch	Up to 12,000 MAC addresses are supported. Therefore, the switch can support networks with 12,000 devices.
BayStack 70-24T 10/100 Ethernet Switch	Up to 12,000 MAC addresses are supported. Therefore, the switch can support networks with up to 12,000 devices.

- Filtering and forwarding incoming and outgoing traffic to the appropriate route without slowing down the traffic
- Store-and-forward forwarding mode to minimize erroneous packets on the network
- Autonegotiation on each port with the following four modes:
  - 10BASE-T half-duplex
  - 10BASE-T full-duplex
  - 100 BASE-TX half-duplex
  - 100 BASE-TX full-duplex



**Note:** In order for ports on a BayStack 70 Series 10/100 Ethernet Switch to operate in full-duplex mode, the switch must be connected to a device that supports autonegotiation in accordance with the IEEE 802.3u specification.

- Back pressure in half-duplex mode
- Automatic polarity detection and correction
- Easy plug-and-play installation with no software to configure, which saves time and minimizes the potential for configuration errors
- A comprehensive LED indicator panel for monitoring switching condition and individual port status
- Conformity to the IEEE 802.3u 100BASE-TX Class II standard
- Conformity to the 802.3 10BASE-T standard
- Per port buffer sizes, as shown in [Table 1-3](#)

**Table 1-3. Buffer Sizes**

Model	Buffer Size
BayStack 70-8T 10/100 Ethernet Switch	64 kilobytes (KB)
BayStack 70-16T 10/100 Ethernet Switch	128 KB
BayStack 70-24T 10/100 Ethernet Switch	128 KB

- MDI/MDI-X push button switch for uplink capability

- External universal power adapter, as shown in [Table 1-4](#)

**Table 1-4. External Power Adapters**

Model	External Power Adapter
BayStack 70-8T 10/100 Ethernet Switch	5V 3A
BayStack 70-16T 10/100 Ethernet Switch	5V 4A
BayStack 70-24T 10/100 Ethernet Switch	n/a (This model has an internal power supply and uses a standard power cord.)



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## Chapter 2

# Network Configuration

The BayStack 70 Series 10/100 Ethernet Switch is designed to provide flexibility in configuring your network connections. Each switch in the series can be used as a standalone device or can be used with 10 Mb/s and/or 100 Mb/s hubs or other interconnection devices in various configurations. The configuration examples in this chapter illustrate the integration of the switches in network environments of all sizes and types. These examples include a network of a few workstations connected to a printer or a segmented network with multiple users or workgroups and other networking devices.

### Benefits of Using Switching Technology

Ethernet switches provide private, dedicated, 10 Mb/s or 100 Mb/s capacity to each connected PC/server or hub/workgroup segment, which is a significantly higher capacity than in a shared environment. The higher bandwidth enables the use of applications such as multimedia, imaging, video, or high-performance client-server functions among users who are spread out over the network.

This improvement is accomplished very easily, with no change to the desktop (such as, network interface cards or software and network wiring). As a result, the performance upgrade and the applications enabled by the switch are obtained very quickly and at a low cost.

Ethernet switches significantly increase network throughput by segmenting network traffic. Switches check traffic coming in to each port to learn which network device is located on which segment. Based on this information, switches forward cross-segment traffic only to the appropriate segment. The traffic will not show up in the other segments because it is filtered out. In this way, network capacity is fully reserved for traffic destined for that segment only, and other segments will not be saturated with unnecessary traffic.

## Types of Ethernet Switches

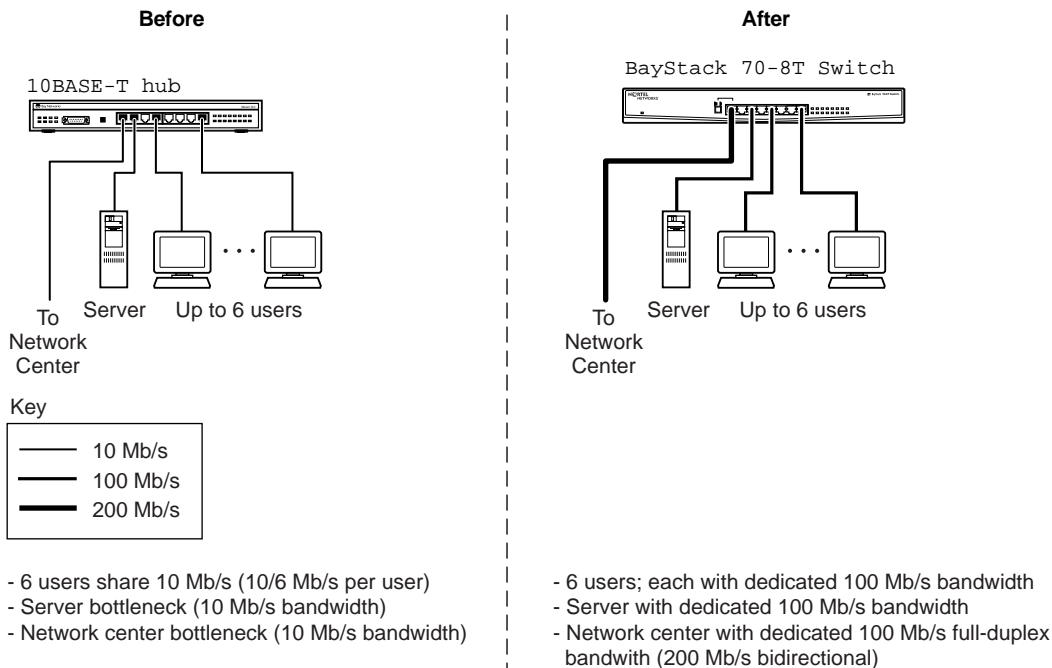
Ethernet switches can be classified as desktop switches or as segment switches. A *desktop switch* is designed to support one or a few PCs per port. It is generally used when individuals need the full 10 Mb/s network throughput to support their applications. Often, these switches support only a single MAC (media access control) address per port, have high-speed 100 Mb/s ports to connect to high-power servers, and are relatively inexpensive compared to a segment switch. A *segment switch*, in contrast, is designed to support an entire workgroup on each port, with each port having significant memory buffering and supporting thousands of MAC addresses.

Switches can also be classified by speed. As the name suggests, 10 Mb/s switches support only 10 Mb/s connections. Similarly, 100 Mb/s switches support only 100 Mb/s connections. Some types of 10+100 Mb/s switches have primarily 10 Mb/s ports with one or a few 100 Mb/s ports. Autosensing 10/100 Mb/s switches such as the BayStack 70 Series 10/100 Ethernet Switch support 10 Mb/s or 100 Mb/s connections on each port, and offer great versatility and adaptability.

# Desktop Switching

[Figure 2-1](#) illustrates a BayStack 70-8T 10/100 Ethernet Switch used as a desktop switch to rebuild a small network that enables users to have 100 Mb/s access to a file server or network center. You can use the BayStack 70-16T 10/100 Ethernet Switch or BayStack 70-24T 10/100 Ethernet Switch as a desktop switch, in a similar application, if you have more users or devices to connect.

You can replace your existing 10BASE-T hub with a BayStack 70 Series 10/100 Ethernet Switch in order to access devices with various transmission speeds or to connect to a larger number of users.



9305EA

**Figure 2-1. Using a BayStack 70 Series 10/100 Ethernet Switch as a Desktop Switch**



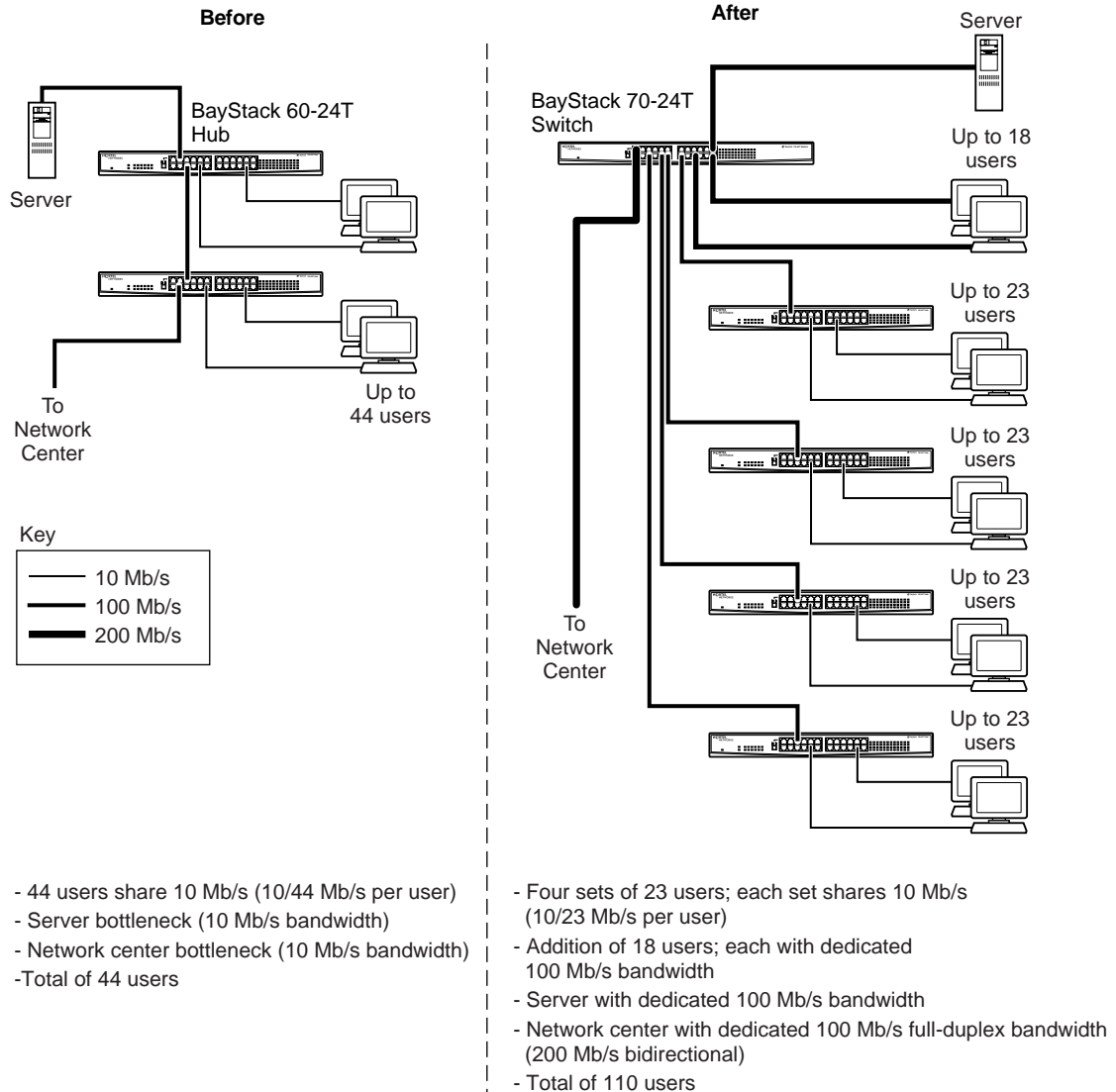
**Note:** If a full-duplex adapter card is installed in the server or PC, a 200 Mb/s connection is possible on the port where the server or PC is connected.

## Segment Switching

The BayStack 70 Series 10/100 Ethernet Switch can segment a network into multiple connected pieces, increasing overall bandwidth and throughput.

[Figure 2-2](#) illustrates a BayStack 70-24T 10/100 Ethernet Switch segmenting networks that are built with BayStack 60-24T Ethernet Hubs. Adding a BayStack 70-24T 10/100 Ethernet Switch to hub configurations allows you to connect more users and devices and to provide faster throughput across your network.



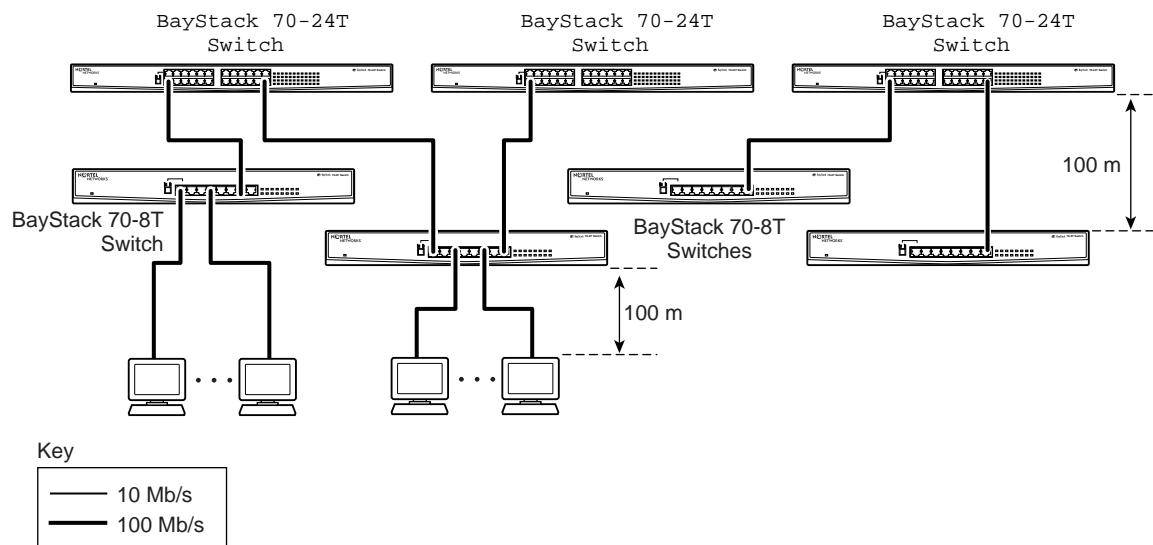


9303EA

**Figure 2-2. Using a BayStack 70 Series 10/100 Ethernet Switch as a Segment Switch**

## Extending a Network

Ethernet specifications limit the length of cable between hubs and PCs to 100 meters (m) for a total diameter of 200 m. By adding Fast Ethernet switches between hubs, the network is expanded by 200 m with the addition of each switch. [Figure 2-3](#) illustrates a network of BayStack 70-8T 10/100 Ethernet Switches integrated with three BayStack 70-24T 10/100 Ethernet Switches. You can use any combination of the BayStack 70 Series 10/100 Ethernet Switches, depending on the needs of your network. You can add numerous workstations, printers, servers, or other hubs and switches to this configuration to include all the end stations on your extended network.

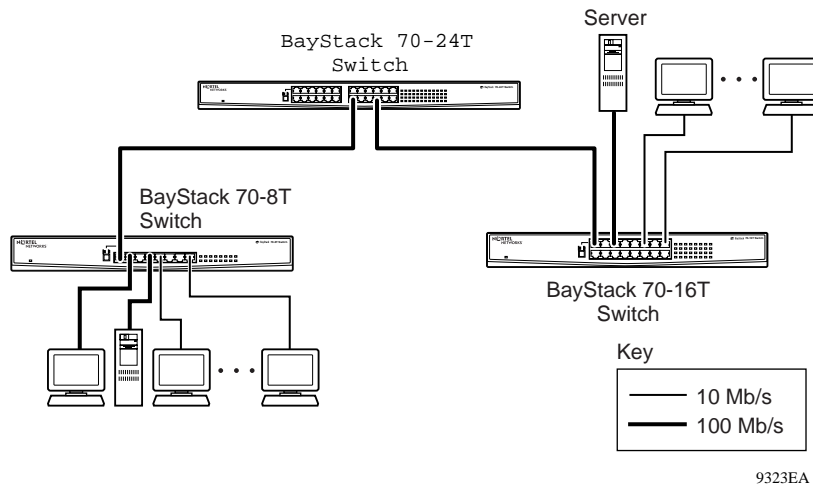


9321E/

**Figure 2-3. Using BayStack 70 Series 10/100 Ethernet Switches for Network Extension**

## Bridging from 10BASE-T to 100BASE-TX Networks

The BayStack 70 Series 10/100 Ethernet Switch can function as a two-port bridge connecting traditional 10BASE-T Ethernet networks to 100BASE-TX Fast Ethernet networks. Users requiring increased network bandwidth can be upgraded to 100 Mb/s while remaining connected to the rest of the network. [Figure 2-4](#) illustrates a BayStack 70-8T 10/100 Ethernet Switch and a BayStack 70-16T 10/100 Ethernet Switch connected by a BayStack 70-24T 10/100 Ethernet Switch, as well as attached to several other network and end station devices.

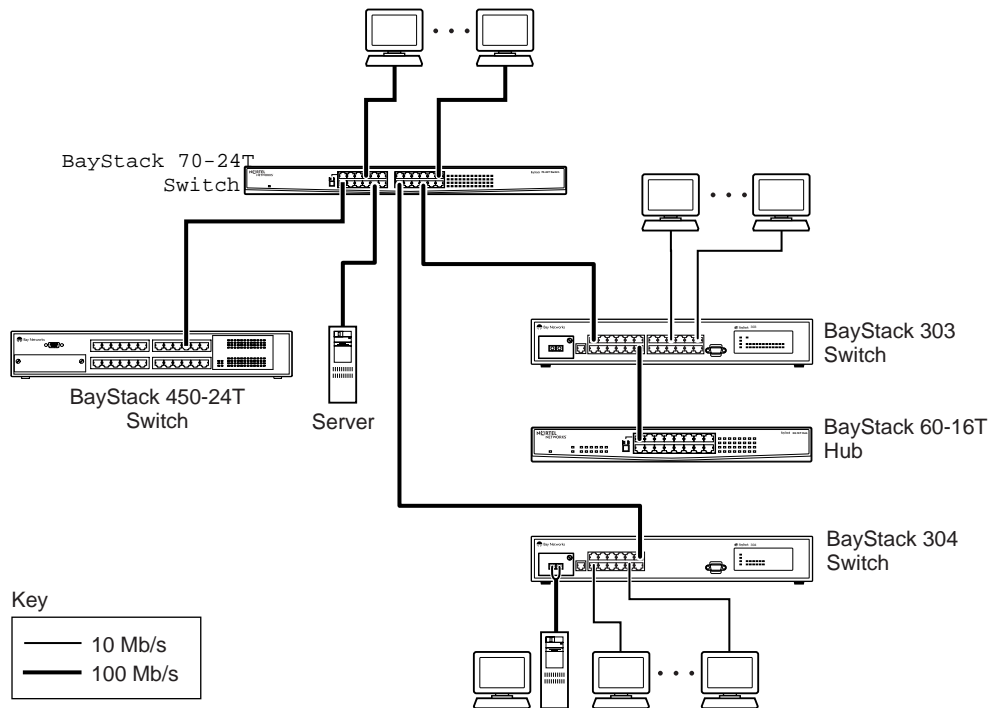


**Figure 2-4. Bridging 10 Mb/s Networks to 100 Mb/s Networks**

## Power Workgroups

The BayStack 70 Series 10/100 Ethernet Switch increases bandwidth for power, or high-density, workgroups and strengthens network throughput.

As shown in [Figure 2-5](#), a BayStack 70-24T 10/100 Ethernet Switch connects to several BayStack switches, as well as high-density end stations and servers. End users can use 10 Mb/s or 100 Mb/s connections throughout this network, as determined by their bandwidth requirements.



9304EB

**Figure 2-5. Power Workgroup Connections**

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## Chapter 3 Installation

This chapter provides information about and procedures for checking the package contents, preparing the site, and performing and verifying the installation of the BayStack 70 Series 10/100 Ethernet Switch.

### Package Contents

Unpack the contents of the package and verify the items against the following list:

- One of the following BayStack 70 Series 10/100 Ethernet Switches:
  - BayStack 70-8T 10/100 Ethernet Switch (8-port 10/100 Mb/s switch)
  - BayStack 70-16T 10/100 Ethernet Switch (16-port 10/100 Mb/s switch)
  - BayStack 70-24T 10/100 Ethernet Switch (24-port 10/100 Mb/s switch)
- Four self-adhesive rubber feet for placing the switch on a flat surface
- Plastic cable holder and metal screw for securing the power cable or power adapter cord
- Wall Mount Kit, including screws and fasteners (for the BayStack 70-8T 10/100 Ethernet Switch or BayStack 70-16T 10/100 Ethernet Switch only)
- Rack Mount Kit, including brackets and screws (for the BayStack 70-24T 10/100 Ethernet Switch only)
- One of the following power adapters
  - BayStack 70-8T 10/100 Ethernet Switch: 5V 3A DC power adapter
  - BayStack 70-16T 10/100 Ethernet Switch: 5V 4A DC power adapter

- Optional, country-specific power cord, which can be purchased with your switch
- Warranty card
- Safety Information card

## Operating Environment

Before you begin installing your switch, prepare the installation site. Make sure the operating environment, as listed in Appendix A, “Technical Specifications,” meets the physical requirements of the switch.

Install your BayStack 70 Series 10/100 Ethernet Switch in a ventilated area that is dust free and away from heat vents, warm air exhaust from other equipment, and direct sunlight. Avoid proximity to large electric motors or other electromagnetic equipment.

## Power Specifications

The BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch feature an external 5 V DC power adapter. The BayStack 70-24T 10/100 Ethernet Switch has an internal (100 to 240 V AC, 50 to 60 Hz) universal power supply. You can purchase a country-specific power cord for any BayStack 70 Series 10/100 Ethernet Switch.

Before connecting the switch to power with any power cord, make sure the power cord has a plug on the other end that is appropriate for the country where you are using the switch.



**Danger:** Use only power cords with a grounding path. Without a proper ground, a person touching the unit is in danger of receiving an electrical shock. Lack of a grounding path to the unit may result in excessive conducted or radiated emissions.

---

## Installing the Switch

Before installing the switch:

1. **Unpack the switch.**
2. **Choose a location near the devices to be connected and close to an electrical outlet.**
3. **Proceed to [“Installing the BayStack 70 Series 10/100 Ethernet Switch on a Flat Surface”](#) or [“Mounting the BayStack 70-24T 10/100 Ethernet Switch in a Rack.”](#)**

### Installing the BayStack 70 Series 10/100 Ethernet Switch on a Flat Surface

The BayStack 70 Series 10/100 Ethernet Switch can be mounted onto any appropriate flat, level surface that can safely support the weight of a switch and its attached cables, as long as there is adequate space around the unit for ventilation and access to cable connectors.



**Caution:** When the BayStack 70 Series 10/100 Ethernet Switch is installed in a stack on a shelf or tabletop, the accumulated weight of the port cables increases with the height of the shelf or tabletop.

---

To install the switch on a desktop or any other flat surface:

1. **Install the self-adhesive rubber pads on the bottom of the switch.**

Peel off the protective backing from the rubber pads and apply one at each marked location on the bottom of the switch.

2. **Set the switch on a desktop or any other flat surface.**

For proper ventilation, make sure that the switch has at least 2 inches (5.1 cm) of space on each side and 5 inches (12.7 cm) of space at the back.



**Caution:** Restricted airflow could cause overheating of the components. Be sure to provide adequate ventilation space on the sides and rear of the switch.

---

**3. Attach any additional devices to the ports in your switch.**

For instructions to connect to additional switches or other devices, refer to [“Connecting Devices to the Switch”](#) on [page 3-5](#).

## Mounting the BayStack 70-24T 10/100 Ethernet Switch in a Rack

The BayStack 70-24T 10/100 Ethernet Switch occupies a 1.6 unit (1.6u) rack space and can be installed in most standard 19-inch equipment racks. The rack must be grounded to the same grounding electrode used by the power service in the area. The ground path must be permanent and must not exceed 1 ohm of resistance from the rack to the grounding electrode.



**Caution:** When mounting this device in a rack, do not place units directly on top of one another in the rack. Each unit must be individually secured to the rack with appropriate mounting brackets. Mounting brackets are not designed to support multiple units.

---

To mount the BayStack 70-24T 10/100 Ethernet Switch in a standard 19-inch equipment rack, you need these tools and materials:

- Two mounting brackets supplied from the Rack Mount Kit
- Eight screws supplied from the Rack Mount Kit to attach the mounting brackets to the switch
- Four screws and nylon washers supplied from the Rack Mount Kit to attach the mounting brackets to the rack
- #1 Phillips screwdriver
- #2 Phillips screwdriver

To install the switch in a rack:

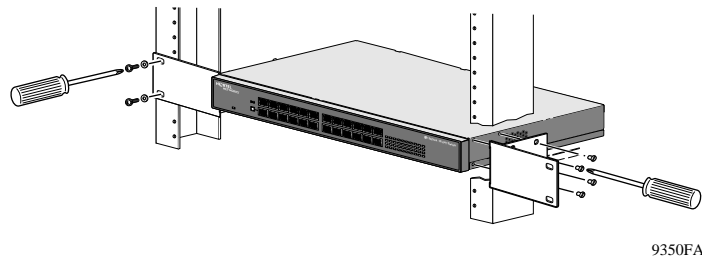
**1. Attach the mounting brackets to the sides of the switch as illustrated in [Figure 3-1](#).**

Hold a mounting bracket against each side of the switch and align the countersunk screw holes in the bracket with the bracket mounting holes in the switch.

**2. Insert the screws provided in the Rack Mount Kit through each bracket and into the bracket mounting holes in the switch.**



3. Using a #1 Phillips screwdriver, tighten the screws to secure each bracket.
4. Hold the switch with the mounting holes in the brackets aligned with the holes in the rack.
5. Insert two screws, appropriate for your 19-inch rack, into each of the mounting brackets and tighten the screws.



**Figure 3-1. Installing the Switch in a Rack**

## Connecting Devices to the Switch

You can connect the BayStack 70 Series 10/100 Ethernet Switch to any device that conforms to the IEEE 802.3 Ethernet standard, such as the following devices:

- Ethernet networking devices
- Individual workstations or servers
- Other switches, bridges, or hubs

The HDX/FDX LED on all BayStack 70 Series 10/100 Ethernet Switch front panels indicates whether the switch is operating in half- or full-duplex mode. When the HDX/FDX LED is on, the port is operating in full-duplex mode (meaning the port is operating at either 20 Mb/s or 200 Mb/s, depending on the connecting device). When the HDX/FDX LED is off, the port is operating in half-duplex mode, which is 10 Mb/s or 100 Mb/s.

You can connect to another device through any of the ports on the switch. The MDI/MDI-X button eliminates the need to use a crossover twisted pair cable when connecting similarly wired devices. You can configure port 1 on a BayStack 70 Series 10/100 Ethernet Switch to uplink or normal mode with the MDI/MDI-X button, using the following guidelines:

- Set the MDI/MDI-X button to the MDI-X (Normal) position and use a standard straight-through UTP cable if the remote end of the cable is connected to an MDI wired device such as a PC, a server, or a router.
- Set the MDI/MDI-X button to the MDI (Uplink) position and use a straight-through UTP cable if the remote end of the cable is connected to an MDI-X wired device such as a 10 Mb/s or 100 Mb/s hub or repeater, or for backbone connection to another switch.

By default, the UTP ports without the MDI/MDI-X button are normal (MDI-X) ports and cannot be configured for uplink (MDI) wiring. If you are using any port except port 1 to connect to another normal (MDI-X) port as on a hub or repeater, you must use a crossover twisted pair cable to connect the two ports.

For further cabling guidelines, refer to Appendix B, “Cables and Connectors.”

## Connecting Power

The BayStack 70 Series 10/100 Ethernet Switch does not have a power on/off switch. When you connect the AC power cord (or DC power adapter) to a suitable AC power outlet, the switch powers up immediately.



**Warning:** Removal of the power cord is the only way to turn off power to this device. The power cord must always be connected in a location that can be accessed quickly and safely in case of an emergency.

---

To connect power to the switch:

**1. Connect the power adapter or power cord to the switch using one of the following methods:**

- For the BayStack 70-8T 10/100 Ethernet Switch or BayStack 70-16T 10/100 Ethernet Switch, connect the DC power adapter to the power adapter receptacle on the rear panel of the switch. Then connect a standard power cord to the adapter.



**Warning:** Use only the power adapter that was shipped with your switch to supply power to that switch. Read the amperage label on the power adapter to be sure it is the correct adapter for your switch.

Do not use the 8-port adapter (5 V DC/3 Amp) with a 16-port switch.

Do not use the 16-port adapter (5 V DC/4 Amp) with an 8-port switch.

---

- For the BayStack 70-24T 10/100 Ethernet Switch, connect one end of the power cord to the power outlet on the rear panel of the switch.

**2. Screw the plastic cable holder into the bottom of the switch, near the power receptacle.**

**3. Snap the power cord or power adapter cord into the cable holder to secure the cord to the switch.**

**4. Connect the other end of the power cord to a standard power supply.**

The switch automatically selects the proper voltage in the range of 100 to 240 volts, and the Power LED lights. The switch is now operational.

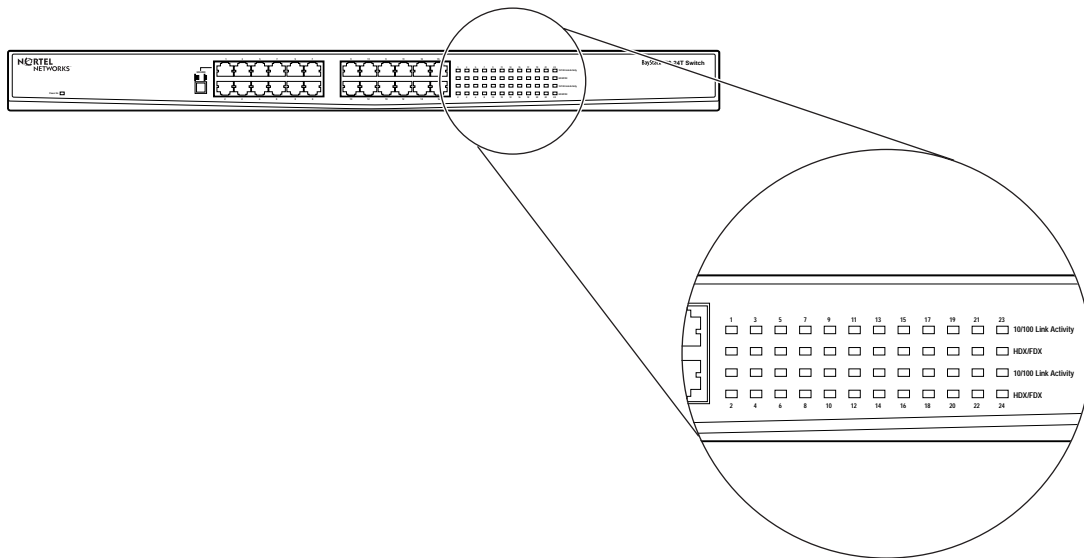
## Verifying Installation

When power is applied to the switch, power-on self-tests are run. You can verify proper orientation of the BayStack 70 Series 10/100 Ethernet Switch by observing the front panel LEDs.

Verify network communications by ensuring that all the necessary connections have been made, that all connected resources can be accessed, and that the LED indicators on the switch are functioning properly. For additional information, refer to Chapter 4, “Troubleshooting.”

## Checking the Diagnostic Displays

[Figure 3-2](#) illustrates the LED indicators on the BayStack 70-24T 10/100 Ethernet Switch. LEDs on the BayStack 70-8T 10/100 Ethernet Switch and BayStack 70-16T 10/100 Ethernet Switch are identical, although there are only as many LEDs as are required for the ports on each model.



9316EA

**Figure 3-2. BayStack 70-24T 10/100 Ethernet Switch LED Display**

[Table 3-1](#) describes the LEDs that monitor the BayStack 70 Series 10/100 Ethernet Switch.

**Table 3-1. Description of Switch and Port Status LEDs**

Type	Label	Color	Activity	Description
Port Status	10/100 Link/Activity	Yellow	On	Port is connected at 10 Mb/s.
		Yellow	Blinking	10 Mb/s activity is occurring on the port.
		Green	On	Port is connected at 100 Mb/s.
			Blinking	100 Mb/s activity is occurring on the port.
			Off	No link is established on the port.
Port Mode	HDX/FDX	Green	On	Port is operating in full-duplex mode.
			Off	Port is operating in half-duplex mode.
Power	Power	Green	On	Power is being supplied to the switch.
			Off	Power is not being supplied to the switch.



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# Chapter 4

## Troubleshooting

This chapter provides methods for diagnosing problems with the BayStack 70 Series 10/100 Ethernet Switch.

### Using the LED Display

Use the LED display to help you identify the type of problem you have; then check the following:

- Verify that the switch is powered on.
- Verify that each cable and port connection has the correct pin assignment and no connections are loose.
- A good link on a port is verified when the Link/Activity LED is lit for that port.

If the Power LED is not on:

- Verify that the power adapter and/or power cord are securely attached to the switch and to the power outlet.
- Verify that your AC power source is functioning properly.

If the Link LED is not on:

- Verify that the device connected to your switch has a properly functioning power supply.
- Try using a different port on your switch to connect to the device.
- Try using a different port on the device connected to your switch.





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# Appendix A

## Technical Specifications

[Table A-1](#) in this appendix provides technical specifications for the BayStack 70 Series 10/100 Ethernet Switch. Data applies to all three switches unless otherwise specified.

### Product Specifications

**Table A-1.      Technical Specifications**

Item	Description
Network Protocol and Standards Compatibility	IEEE 802.3 10BASE-T/100BASE-TX Ethernet IEEE 802.3u 100 Mb/s Ethernet
Data Rate/Encoding	10 Mb/s differential Manchester encoded 100 Mb/s MLT encoded 125 MHz signal rate
Interfaces	RJ-45 8-pin plug for 10BASE-T and 100BASE-TX
Electrical Specifications	
Input power:	70-8T: 15 W, 5 V 3A 70-16T: 20 W, 5 V 4A 70-24T: 100 to 240 V AC, 50 to 60 Hz, 2A
Power consumption:	70-8T: 15 W Maximum 70-16T: 20 W Maximum 70-24T: 50 W Maximum

Item	Description
<b>Physical Specifications</b>	
Weight:	70-8T and 70-16T: 3.99 lb (1.81 kg) 70-24T: 5.3 lb (2.5 kg)
Dimensions:	70-8T and 70-16T: (D) 8.3 x (W) 12.0 x (H) 1.6 in. (D) 208.0 x (W) 304.7 x (H) 40.6 mm  70-24T: (D) 12.1 x (W) 17.3 x (H) 1.7 in. (D) 308.0 x (W) 437.5 x (H) 42.5 mm
<b>Environmental Specifications</b>	
Operating temperature:	0° to 40° C
Storage temperature:	-20° C to 65° C
Operating humidity:	20% to 80% maximum relative humidity, noncondensing
Storage humidity:	70-8T and 70-16T: 5% to 90% maximum relative humidity, noncondensing  70-24T: 10% to 90% maximum relative humidity, noncondensing
<b>Electromagnetic Emissions</b>	
Meets requirements of:	FCC Part 15, Subpart B, Class A AS/NZS 3548 Class A EN55 022 (CISPR 22) Class A VCCI Class A ITE BCIQ

Item	Description
<b>Electromagnetic Susceptibility</b>	
Meets requirements of:	EN 50082-1
Electrostatic discharge (ESD):	EC 801-2, Level 2/3
Radiated electromagnetic field:	EC 801-2, Level 2
Electrical fast transient/burst:	EC 801-4, Level 2
Electrical surge:	EC 801-5, Level 1/2
<b>Safety Agency Approvals</b>	
	UL 1950 or NRTL CSA C22.2 #950 TUV NOM
<b>Performance Specifications</b>	
Aggregate bandwidth:	70-8T: 800 Mb/s 70-16T: 1.6 Gb/s 70-24T: 2.4 Gb/s
Packet filtering/forwarding rate:	14,800 frames/second, maximum on 10 Mb/s port  148,000 frames/second, maximum on 100 Mb/s port
Forwarding modes:	Store-and-forward
Network latency:	Less than 80 microseconds for 64-byte frames in store-and-forward mode for 10 Mb/s to 100 Mb/s transmission
Address database size:	70-8T: 8,000 media access control (MAC) addresses per system  70-16T: 12,000 MAC addresses per system  70-24T: 12,000 MAC addresses per system
Addressing:	48-bit MAC address
Queue buffer, per port:	70-8T: 64 kilobytes (KB)  70-16T and 70-24T: 128 KB



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# Appendix B

## Cables and Connectors

This appendix provides specifications for cables and connectors used for the BayStack 70 Series 10/100 Ethernet Switch.

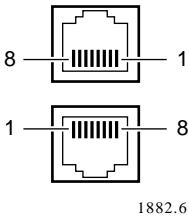
### 10BASE-T/100BASE-TX UTP Cable

For 10BASE-T and 100BASE-TX connections, use Category 5, 8-wire unshielded twisted pair cable. Configure your network according to the following guidelines:

- Use a maximum segment length of 100 meters.
- Use an 8-pin modular plug (RJ-45).

[Table B-1](#) shows the RJ-45 connector pin assignments for MDI-X and MDI ports.

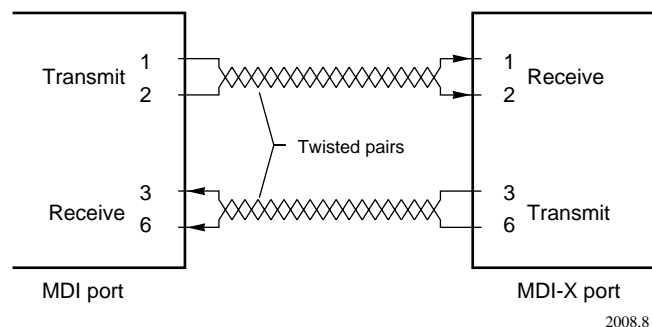
**Table B-1. RJ-45 Connector Pin Assignments**

RJ-45 10BASE-T/100BASE-TX Ethernet Port	Pin	10BASE-T MDI-X (Normal) Port	100 BASE-TX MDI-X Port	MDI (Uplink) Port
	1	RX+ (Receive)	RX+	TX+
	2	RX- (Receive)	RX-	TX-
	3	TX+ (Transmit)	TX+	RX+
	4	Not used	Common-Mode Terminated (CMT)	
	5	Not used	CMT	
	6	TX- (Transmit)	TX-	RX-
	7	Not used	CMT	
	8	Not used	CMT	

## Straight-Through and Crossover Cables

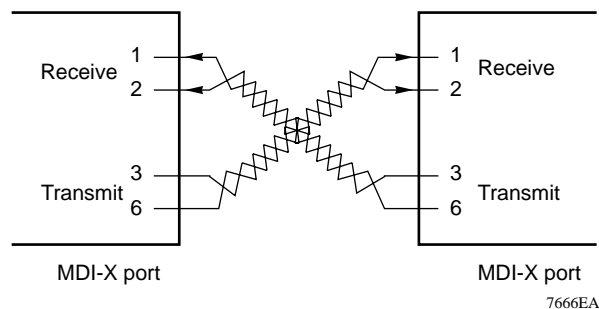
For two devices to communicate, the transmitter of each device must be connected to the receiver of the other device. The crossover function is usually implemented internally as part of the circuitry in the device. Computers and workstation adapter cards are usually media-dependent interface ports, called MDI or uplink ports. Most hub and switch ports are configured as media-dependent interfaces with built-in crossover ports, called MDI-X or normal ports. Refer to the instructions in Chapter 3, “Installation,” for appropriate cable use and connection.

[Figure B-1](#) illustrates a straight-through twisted-pair cable.



**Figure B-1. Straight-Through Twisted-Pair Cable**

[Figure B-2](#) illustrates a crossover twisted-pair cable.



**Figure B-2. Crossover Twisted-Pair Cable**

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